

# Julie Bergner

UNIVERSITY OF CALIFORNIA RIVERSIDE

*presented by*

The **UO Chapter of the Association for Women in Mathematics**

**THIS TALK ACCESSIBLE  
TO UNDERGRADUATES**

## **Groupoids and Egyptian fractions**

3pm Friday May 30th  
Fenton 117

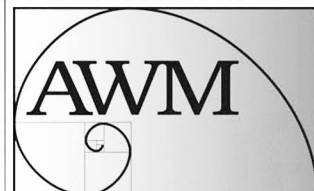
Given a group, we can take its order by counting the number of elements. Furthermore, given any natural number, we can find a group of that order. One way to generalize groups is by a structure called a groupoid. There is a fancier way to “count” a groupoid which results in a positive real number. We could then ask if we can get any positive real number from a groupoid in this way. This question turns out to be equivalent to an old question in number theory of whether any positive rational number has an Egyptian fraction decomposition, and the answer to both is yes. In this talk, we will introduce groupoids and their cardinality, as well as Egyptian fractions, and give a proof establishing the positive answer to the above question. Additionally, I will also talk a little about my background as a mathematician.

## **Homotopy theory and higher categories**

4pm Thursday May 29th  
Allen Hall 140

Tea at 3:30pm in Fenton Lounge

A recent trend in homotopy theory is to consider homotopical categories themselves as objects of study. Such structures can arise as model categories, or more general categories with weak equivalences, or alternatively as categories up to homotopy, often called  $(\infty, 1)$ -categories. There are many different models for these structures, but their respective model categories are all known to be equivalent. A more difficult problem is generalizing these models to homotopical versions of higher categories, or  $(\infty, n)$ -categories. In this talk we consider the known models for these structures and the comparisons between them.



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